

Amendments to the Drawings

The attached sheets of drawings include changes to FIGS. 1 to 7. These sheets, which include FIGS. 1 to 7, replace the original sheets including FIGS. 1 to 7. The corrected drawings are required in reply to the Office Action to avoid abandonment of the application. The Applicants respectfully contend that FIGS. 1 to 7 are now in compliance with 37 CFR 1.121(d).

Attachments: Replacement sheets (5)

REMARKS

The Office Action mailed on December 21, 2007 has been reviewed, along with the art cited. Claims 1-22 were pending at the time of examination. Claims 1-2, 4, 6, 8-9, 12-16, 18, and 20 have been amended. Reconsideration of claims 1-22 is respectfully requested in light of the following remarks.

Drawings

Page 2 of the Office Action indicates that “new corrected drawings in compliance with 37 CFR 1.121(d) because the drawings are dark and the handwritten words and element numbers are unclear. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application.” The Applicants have provided replacement Figures 1 to 7 that have been formalized according to 37 CFR § 1.84. The Applicants respectfully assert that the replacement figures as presented do not introduce any new matter.

Further, page 3 of the Office Action indicates that the “drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 236.” The Applicants respectfully submit that there is no reference character 236 in the figures. As indicated above, the Applicants have provided replacement Figures 1 to 7 that have been formalized according to 37 CFR § 1.84. The Applicants respectfully assert that the replacement figures as presented do not introduce any new matter. No changes have been made to the drawings other than to comply with formal requirements of 37 C.F.R §1.84 and therefore no marked-up drawings are provided.

Accordingly, the Applicants respectfully request withdrawal of this objection.

Specification

In response to the Examiner's objections to the disclosure as stated in paragraphs 6 and 7 on page 3 of the Office Action, Applicants respectfully submit that the abstract and the specification have been amended to satisfy the Examiner's objection to the disclosure. The abstract has been amended to indicate at least one value is entered. Paragraph 0021, line 1 of the specification has been amended to specify "300" in reference to Figure 3. Accordingly, withdrawal of these objections to the specification is respectfully requested.

Claim Objections

In response to the Examiner's objections to the claims as stated on page 3 of the Office Action, the Applicants respectfully submit that claims 4, 6, 8, 18, 20, and 22 have been amended to overcome the Examiner's objections by correcting the spelling of "gauge" in claims 4, 8, 18, and 22 and by changing "the position" and "the location" recited in claims 6 and 20 to "the placement" for consistent claim terminology. Accordingly, withdrawal of the objections to these claims is respectfully requested.

Claim Rejections - 35 USC § 112

Claims 1-22 were rejected under 35 USC § 112, second paragraph as being "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." Claims 1, 9, and 13-15 were rejected under 35 USC § 112, second paragraph as "being incomplete for omitting essential steps, such omission amounting to a gap between the steps."

Paragraph 13 of the Office Action rejects claims 1-22 for "use [of] the words 'selectively' and 'selected.' The use of these terms in the claim language render the claims vague and indefinite since it is unclear how something is 'selectively entered' or 'selected.' There is no recitation of selecting a value based on some criteria or anything to give insight into how these steps are done." Applicants respectfully traverse this

rejection.

Applicants respectfully assert that use of the term “selected,” when read in light of the present application, means the value entered is selected to represent the feature or characteristic of the cable plant being modeled. For example, paragraph 0012, lines 2-5 of the present application state that “System 100 includes input device 108 for gathering data from the user to define the characteristics of the cable plant and to select the service to be provided over the cable plant.” Applicants contend that use of the word ‘selected’ in claims 1-22 is not indefinite. As a result, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 14 of the Office Action rejects claim 1, line 4, as being “interpreted to mean that ‘a value’ is entered that corresponds to one or more parameters of the cable plant, however, the further limitations of ‘the entered values’ make it unclear as to whether one value will correspond to these one or more parameters or whether there is one individual value entered for each parameter of the cable plant entered. Further, it is unclear whether one value is entered as in line 4, or whether multiple values are entered as in line 6.” Applicants respectfully assert that the language of claim 1 is not unclear. Moreover, the use of the term “value” in claim 1 is to be interpreted as broadly covering “one or more” values. Applicants have amended line 4 of claim 1 to indicate “on entering each of the at least one value” to clarify an action taken *on each* value of the at least one value selectively entered as called for in the present claim 1. Respectfully, Applicants contend that “entering at least one value” in claim 1 is not indefinite. As a result, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 15 of the Office Action rejects claim 1 under 35 USC § 112, second paragraph as “being incomplete for omitting essential steps, such omission amounting to a gap between the steps.” Paragraph 15 further states that the “omitted steps are: ‘determining’ ‘the estimated cable loss for the cable plant’. The claims recite ‘determining and displaying the estimated cable loss for the cable plant,’ and recite, ‘based on the entered values and an empirical model of cable loss’.” The Examiner

indicates that this step “does not give an adequate understanding of how the estimated cable loss is ‘determined’. ‘Values’ are entered and an empirical model of cable loss is provided, but there is no interrelationship between the entered values and the empirical model. It is unclear whether the entered values are used in the empirical model to ‘determine’ the estimated cable loss.” Applicants respectfully traverse this rejection.

Applicants refer the Examiner to the amended language of present claim 1, wherein the steps of “determining” and “displaying” have been separated. However, Applicants assert that the current amendments to claim 1 do not affect the substantive scope of claim 1. Accordingly, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 16 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the estimated cable loss” in line 6 of claim 1. Paragraph 18 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the number of gage changes” in line 1 of claim 8. Paragraph 19 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the cable spans” in line 4 of claim 9. Paragraph 20 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the bridge taps” in line 6 of claim 9. Applicants have amended claims 1, 8, and 9 to overcome these rejections of insufficient antecedent basis. Accordingly, Applicants respectfully request withdrawal of these rejections under 35 USC § 112, second paragraph.

Paragraph 17 of the Office Action indicates that claim 6 “includes the limitations ‘greater than a selected length’ and ‘less than the selected length’”. These claims are vague and indefinite since it is unclear what ‘a selected length’ is and therefore, further unclear what would be ‘greater than a selected length’ and ‘less than a selected length’.” Applicants respectfully traverse this rejection of claim 6. Applicants assert that the limitation “a selected length” conveys an ordinary meaning of length and is not unclear to one of skill in the art. Accordingly, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 21 of the Office Action indicates that there is insufficient antecedent

basis for the limitation “the component loss values” in line 10 of claim 9. Applicants traverse this rejection and refer the Examiner to lines 8 and 9 of claim 9, which recite “calculating component loss values.” Applicants assert that lines 8 and 9 of claim 9 provide sufficient antecedent basis for the claimed limitation. Accordingly, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 22 of the Office Action rejects claim 9 under 35 USC § 112, second paragraph as “being incomplete for omitting essential steps, such omission amounting to a gap between the steps.” Paragraph 22 further states that the “omitted steps are: calculating component loss *values* for the cable spans and the bridge taps. Lines 8-9 are directed to calculating component loss values for *one of the cable spans and bridge taps*. Line 10 recites ‘the component loss values for the cable spans and bridge taps’. Lines 8-9 recite only calculating the values for one cable span and bridge taps wherein line 10 appears to be directed to component loss values that have been calculated for multiple cable spans and bridge taps.” The Examiner indicates that it “appears that the step of calculating component loss values for multiple cable spans and bridge taps is missing.” Paragraph 23 of the Office Action rejects claim 9, lines 10-11, which are “directed to ‘generating an estimated cable loss’ by ‘combining’ the ‘component loss values’.” The Examiner further indicates that it is “unclear what ‘combining’ means or is doing and how this would ‘generate’ an estimated cable loss.” Paragraph 24 of the Office Action rejects claim 9, lines 12-14, which are “directed to ‘displaying the estimated cable loss’ based on the entered values and an empirical model of cable loss.” The Examiner further states that it is “unclear what is meant by this limitation. Specifically, ‘based on the entered values and an empirical model’ give no insight into how this estimated cable loss is displayed and the empirical model appears to have no interrelationship with either the estimated cable loss or the entered values.” Applicants respectfully traverse these rejections.

Applicants refer the Examiner to the amended language of present claim 9, wherein the step of “on entering each one of the first and second set of values, calculating

component loss values” has been amended with “on entering each one of the first and second set of values, calculating component loss values for each of the cable spans and the bridge taps based on at least the entered first and second set of values and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant.” Applicants respectfully assert that the claimed “on entering each one of the first and second set of values” indicates *each* time a value is entered for *each* of the cable spans and the bridge taps. Moreover, the amendments to claim 9 further clarify how “the entered first and second set of values and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant” relate to the step of calculating component loss values. For example, paragraph 23 of the present application discloses at least one example of calculating the component loss values:

Figure 4 provides an overview of one embodiment of a process for updating the estimate of the cable loss based on the new or changed values entered into the system, e.g., system 100 of Figure 1. The process of Figure 4 begins at block 400. At block 402, the process determines whether a new or changed value has been received. If not, the process returns to block 402. If a new or changed value has been received, the process proceeds to block 404 and calculates a new or updated component of the estimate based on the newly entered or updated value. For example, in one embodiment, the estimate of the cable loss is based on three components: span loss, bridge tap loss, and gauge change loss. In other embodiments, other components are used to determine an overall cable loss estimate.

As a result, Applicants contend that claim 9 has been amended to overcome these rejections. Accordingly, Applicants respectfully request withdrawal of these rejections under 35 USC § 112, second paragraph.

Paragraph 25 of the Office Action indicates that “the term ‘at least some of’ in claim 11 is a relative term which renders the claim indefinite. The term ‘at least some of’

is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.” Applicants respectfully traverse this rejection.

Applicants assert that the term “at least some of” is not indefinite. Applicants further assert that this term, when read in light of the present application, provides a boundary to which one of skill in the art would be capable of infringing upon (if exceeded). Accordingly, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 26 of the Office Action indicates that claim 12 “recites the limitation ‘the length of the bridge tap’ in line 2. There is insufficient antecedent basis for this limitation in the claim. Because this claim is directed to the step of ‘calculating the component loss value’ in claim 9 and there was no recitation of ‘the length of the bridge tap’ before this limitation in claim 9, it was determined that this ‘length of the bridge tap’ does not correspond to ‘bridge tap length’ recited in line 14 of claim 9.” Applicants respectfully assert that claim 12 has been amended to clarify the intended limitation of “the bridge tap length” as recited in the present claim 12. Accordingly, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 27 of the Office Action indicates that for claim 13, the “limitation in line 4 can be interpreted to mean that ‘a value’ is entered that corresponds to one or more parameters of the cable plant, however, the further limitations of ‘the entered values’ make it unclear as to whether one value will correspond to these one or more parameters or whether there is one individual value entered for each parameter of the cable plant entered. Further, it is unclear whether one value is entered as in line 4, or whether multiple values are entered as in line 6.”

Applicants respectfully assert that the language of claim 13 is not unclear. Applicants refer the Examiner to similar arguments presented above with respect to claim 1 in response to paragraph 14 of the Office Action. That is, the use of the term “value” in claim 13 is to be interpreted as broadly covering “one or more” values. Applicants have amended line 4 of claim 13 to indicate “on entering each of the at least one value” to

clarify an action taken *on each* value of the at least one value selectively entered as called for in the present claim 13. Respectfully, Applicants contend that “entering at least one value” in claim 13 is not indefinite. As a result, Applicants respectfully request withdrawal of this rejection under 35 USC § 112, second paragraph.

Paragraph 28 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the estimated cable loss” in line 6 of claim 13. Applicants have amended claims 13 to read “an estimated cable loss” in line 6 of the present claim 13. Paragraph 30 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the cable spans” in line 3 of claim 14. Paragraph 31 of the Office Action indicates that there is insufficient antecedent basis for the limitation “the bridge taps” in lines 5-6 of claim 14. Applicants have amended claim 14 to read “cable spans” in line 3 and “bridge taps” in claim 14. Accordingly, Applicants respectfully request withdrawal of these rejections for claims 13 and 14 under 35 USC § 112, second paragraph.

Paragraph 29 of the Office Action rejects claim 13 under 35 USC § 112, second paragraph as “being incomplete for omitting essential steps, such omission amounting to a gap between the steps.” Paragraph 29 further states that the “omitted steps are: ‘determining’ ‘the estimated cable loss for the cable plant’. The claims recite ‘determining and displaying the estimated cable loss for the cable plant,’ and recite, ‘based on the entered values and an empirical model of cable loss’.” The Examiner indicates that this step “does not give an adequate understanding of how the estimated cable loss is ‘determined’. ‘Values’ are entered and an empirical model of cable loss is provided, but there is no interrelationship between the entered values and the empirical model. It is unclear whether the entered values are used in the empirical model to ‘determine’ the estimated cable loss.” Applicants respectfully traverse this rejection of claim 13.

Applicants refer the Examiner to the amended language of present claim 13, wherein the steps of “determining” and “displaying” have been separated. However, Applicants assert that the current amendments to claim 13 do not affect the substantive scope of claim 13. Accordingly, Applicants respectfully request withdrawal of this

rejection under 35 USC § 112, second paragraph.

Paragraphs 32, 33 and 34 appear to reject claim 14 under 35 USC § 112, second paragraph for the same reasons as claim 9 in paragraphs 22, 23 and 24 of the Office Action. Applicants refer the Examiner to the arguments presented above in response to paragraphs 22, 23 and 24 of the Office Action with respect to claim 14. As a result, Applicants contend that claim 14 (like claim 9) has been amended to overcome these rejections. Accordingly, Applicants respectfully request withdrawal of these rejections of claim 14 under 35 USC § 112, second paragraph.

Paragraphs 35 to 39 appear to reject claims 15, 20 and 21 under 35 USC § 112, second paragraph for the same reasons as claims 1, 6 and 8 in paragraphs 15 to 18 of the Office Action. Applicants refer the Examiner to the arguments presented above in response to paragraphs 15 to 18 of the Office Action with respect to claims 15, 20, and 22. As a result, Applicants contend that claims 15, 20, and 22 (like claims 1, 6, and 8) have been amended to overcome these rejections. Accordingly, Applicants respectfully request withdrawal of these rejections of claims 15, 20 and 22 under 35 USC § 112, second paragraph.

The Applicants respectfully submit that claims 1-22 have been reviewed, and claims 1-2, 4, 6, 8-9, 12-16, 18 and 20 have been amended “to eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format” as stated in paragraph 40 of the Office Action. Accordingly, the Applicants respectfully request withdrawal of the rejection of claims 1-22 under 35 USC § 112, second paragraph.

Rejections Under 35 USC § 103

Claims 1, 2, 4, 5, 8, 9-16, 18, 19 and 22 were rejected under 35 USC § 103(a) as being unpatentable over ADC DSL Systems, Inc. "Cable Calculator User's Manual" in view of Lechleider et al. (U.S. Patent No. 6,091,713), hereinafter "*Lechleider*." Applicants respectfully traverse this rejection.

Claims 1, 2, 4-5, and 8

Applicants respectfully assert that *Lechleider*, in view of "Cable Calculator User's Manual," either alone or in combination, fails to teach or suggest the method of claim 1. In *Lechleider*, there is no discussion of "determining an estimated cable loss for the cable plant providing the service based on all of the entered at least one value and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant" as called for in claim 1.

Applicants agree with the Examiner on page 13 of the Office Action that "Cable Calculator User's Manual" does not "expressly teach the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant" as called for in claim 1. Moreover, there is no teaching or discussion in "Cable Calculator User's Manual" of "estimating a cable loss based on the set of entered values and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant" as called for in claim 1. Hence, even if there was motivation to combine these references, the references do not teach or suggest all of the steps as called for in the method of claim 1.

At most, *Lechleider* appears to calculate the location of bridge taps based on testing to determine cable losses. See, for example, Col. 8, lines 41 to Col. 9, line 34 of *Lechleider*, which discusses "voiceband frequency response calculated from the information collected by modems 103 and 113 may be used for synthesizing the subscriber local loop 130 structure that approximates a set of measured loop characteristics" where "the subscriber local loop 130 may be divided into smaller loop segments, with the location of bridged taps 107 defining the length of each loop segment"

and each “loop segment or bridged tap 107 can be treated as a 2-port network whose input and output are related by the coefficients, namely ABCD, of a two by two matrix.” Applicants respectfully assert that *Lechleider* does not teach or suggest the claimed empirical model to estimate the cable loss.

In addition, it is respectfully submitted that the Examiner has not indicated how one of skill in the art would have known to use the test data of *Lechleider* to construct the empirical model as called for in claim 1. Therefore, Applicants respectfully assert that none of the references, alone or in combination, teach or suggest the method of claim 1. Accordingly, withdrawal of the rejection of claim 1 is respectfully requested.

Claims 2, 4, 5, and 8 depend from claim 1 and, as such, are allowable for at least the reasons provided above with respect to claim 1. Withdrawal of the rejection of these claims is respectfully requested.

Claims 9-12

The Office Action appears to reject claim 9 on the same basis as claim 1. Therefore, the arguments set forth above with respect to claim 1 apply to claim 9 as well. That is, none of the references, either alone or in combination, teach or suggest a method for “calculating component loss values for each of the cable spans and the bridge taps based on at least the entered first and second set of values and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant” as called for in claim 9. In addition, none of the references, either alone or in combination, teach or suggest a method for “combining the component loss values for the cable spans and the bridge taps to generate an estimated cable loss and displaying the estimated cable loss for the cable plant providing the service” as called for in claim 9. Accordingly, withdrawal of the rejection of claim 9 is respectfully requested.

Claims 10-12 depend from claim 9 and, as such, are allowable for at least the reasons provided above with respect to claim 9. Withdrawal of the rejection of these claims is respectfully requested.

Claim 13

The Office Action appears to reject claim 13 on the same basis as claims 1 and 9. Therefore, the arguments set forth above with respect to claims 1 and 9 apply to claim 13 as well. That is, none of the references, either alone or in combination, teach or suggest a tool with “means, communicatively coupled to the means for identifying and the means for selectively entering, for determining an estimated cable loss for the cable plant providing the service on entry of the values based on all of the entered at least one value and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant” as called for in claim 13. Accordingly, withdrawal of the rejection of claim 13 is respectfully requested.

Claim 14

The Office Action appears to reject claim 14 on the same basis as claims 1, 9, and 13. Therefore, the arguments set forth above with respect to claims 1, 9, and 13 apply to claim 14 as well. That is, none of the references, either alone or in combination, teach or suggest a tool with “means, communicatively coupled to the means for identifying and the means for selectively entering the first set of values and the means for selectively entering the second set of values, for calculating component loss values for each of the cable spans and the bridge taps based on at least the entered first and second set of values and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant” as called for in claim 14. In addition, none of the references, either alone or in combination, teach or suggest a tool with “means, communicatively coupled to the means for calculating, for combining the component loss values for the cable spans and the bridge taps to generate an estimated cable loss; and means, communicatively coupled to the means for combining, for displaying the estimated cable loss for the cable plant providing the service” as called for in claim 14. Accordingly, withdrawal of the rejection of claim 14 is respectfully requested.

Claims 15, 16, 18, 19, and 22

The Office Action appears to reject claim 15 on the same basis as claims 1, 9, 13, and 14. Therefore, the arguments set forth above with respect to claims 1, 9, 13, and 14 apply to claim 15 as well. That is, none of the references, either alone or in combination, teach or suggest a method for “selectively entering at least one value corresponding to at least one parameter of the cable plant” as called for in claim 15. In addition, none of the references, either alone or in combination, teach or suggest a method where “on entering each of the at least one value, determining an estimated cable loss for the cable plant providing the service based on all of the entered at least one value and an empirical model of cable loss, the empirical model including data on losses affected by bridge tap placement and bridge tap length in the cable plant” as called for in claim 15. Accordingly, withdrawal of the rejection of claim 15 is respectfully requested.

Claims 16, 18-19, and 22 depend from claim 15 and, as such, are allowable for at least the reasons provided above with respect to claim 15. Withdrawal of the rejection of these claims is respectfully requested.

Claims 3 and 17 were rejected under 35 USC § 103(a) as being unpatentable over “Cable Calculator User’s Manual” in view of *Lechleider*. Applicants respectfully traverse this rejection.

Claims 3 and 17 depend from claims 1 and 15, respectively, and, as such, include the limitations of claims 1 and 15, respectively. Thus, at least for the reasons set forth above for claims 1 and 15, claims 3 and 17 would not have been obvious over “Cable Calculator User’s Manual” in view of *Lechleider*. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of these claims under 35 USC § 103(a).

CONCLUSION

The Applicants respectfully submit that claims **1-22** are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: April 16, 2007

/David N. Fogg/

David N. Fogg

Reg. No. 35,138

Attorneys for Applicants

Fogg & Powers LLC

P.O. Box 581339

Minneapolis, MN 55458-1339

T – (612) 332-4720

F – (612) 332-4731